

- 14 -

CLAIMS

1. An instrumented antifriction bearing device comprising a rotating portion, a nonrotating portion, and an assembly for detecting rotation parameters comprising an encoder (8) and a sensor (7) integral with said nonrotating portion and provided with a sensor unit (10), characterized in that the sensor comprises at least one microcoil (20) with substantially flat winding, placed on a support (17) of a circuit (18) mounted in the sensor unit (10) of the nonrotating portion such that said microcoil comes axially opposite the encoder (8).
2. The device as claimed in claim 1, characterized in that it comprises a plurality of substantially radial coplanar reception microcoils.
3. The device as claimed in claim 1, characterized in that it comprises a plurality of reception microcoils placed on a plurality of parallel radial planes.
4. The device as claimed in any one of the preceding claims, characterized in that it comprises a transmission coil (19) placed in the sensor unit.
5. The device as claimed in any one of the preceding claims, characterized in that at least one transmission coil, at least one reception coil and a data processing circuit (18) are placed on the support.
6. The device as claimed in any one of the preceding claims, characterized in that it comprises a plurality of microcoils linked together in pairs

- 15 -

(24, 25) in order to generate a differential signal.

- 5 7. The device as claimed in any one of the preceding claims, characterized in that the encoder comprises an encoder wheel whose active zone is made of an electrically conducting metal.
- 10 8. The device as claimed in any one of the preceding claims, characterized in that the encoder comprises an encoder wheel with windows or with teeth attached to a rotating race (3) of the antifriction bearing.
- 15 9. The device as claimed in any one of claims 1 to 7, characterized in that the encoder comprises a printed circuit whose annular substrate is provided with metallized sectors and nonmetallized sectors.
- 20 10. The device as claimed in claim 9, characterized in that the printed circuit is mounted on a rotating race of the antifriction bearing.
- 25 11. The device as claimed in any one of the preceding claims, characterized in that at least one portion of the encoder is placed in the space situated between the antifriction bearing races.
- 30 12. The device as claimed in any one of the preceding claims, characterized in that the encoder is placed outside the space situated between the antifriction bearing races.
- 35 13. The device as claimed in any one of the preceding claims, characterized in that the sensor unit is annular.

- 16 -

14. The device as claimed in any one of claims 1 to 12, characterized in that the sensor unit occupies an angular sector of less than 360°.

5

15. An electric motor comprising a rotor, a stator, at least one antifriction bearing (1) supporting the rotor, and a sensor assembly comprising an encoder (8) and a sensor (7), characterized in that the
10 sensor (7) comprises at least one microcoil (20) with essentially flat winding, placed on a support (17) of a circuit (18) mounted in the sensor unit (10) integral with the stator such that the microcoil comes axially opposite the encoder.